

### Claims 1, 15, and 25

According to previously presented claim 1, the frequency-dependent phase pre-distortion is based on at least one corresponding phase difference between at least one pair of critical frequencies. In rejecting claim 1, the Examiner admitted, in paragraph 5, that "Hsu does not teach one corresponding phase difference between at least one pair of critical frequencies." Nevertheless, the Examiner rejected claim 1 by combining Hsu with Strait, which according to the Examiner, "teaches one corresponding phase difference between at least one pair of critical frequencies." As explained in detail below, the Applicant submits that the Examiner's rejection of claim 1 is improper because (1) there is no motivation to combine the teachings of Hsu and Strait and (2) the combination of Hsu and Strait does not provide the invention of claim 1.

Like the present application, Hsu is related to a technique for predistorting a signal prior to application to distortion-generating circuitry, such as an amplifier, in order to compensate for the effects of that distortion. See, e.g., Hsu's Abstract, lines 1-4. Strait, on the other hand, has nothing to do with predistortion of a signal prior to application to distortion-generating circuitry. Strait includes teachings related to processing of a received signal at a receiver to compensate for phase distortion associated with modulation of data onto a carrier and phase distortion imposed on carriers by a channel (see, e.g., column 2, lines 56-58), but this distortion compensation is applied after the distortion occurs; it is not pre-distortion. And the distortion that is compensated for has nothing to do with amplifiers and other related distortion-generating circuitry.

Moreover, Strait's disclosure deals with linear distortion, while Hsu and the present application deal with non-linear distortion. Linear distortion occurs, for example, when a signal travels through a medium with different velocities for different frequencies but the response of the medium does not vary with the amplitude of the signal. Non-linear distortion, on the other hand, occurs when the response of the medium (e.g., an amplifier) depends on the amplitude of the signal (and potentially the frequency, as well). In Hsu and in the present application, pre-distortion is intended to correct the non-linear distortion occurring in the amplifier, while Strait corrects for the linear distortion in the transmission medium.

There is simply no motivation to combine the teachings of Strait, which are related to compensation for linear distortion after the distortion has occurred, with the teachings of Hsu, which are related to predistorting signals prior to application to non-linear distortion-generating circuitry. The Examiner suggested, in paragraph 5, that "It would have been obvious to combine" the teachings of Hsu and Strait since they are both related to "the area of distortion." The Applicant submits that that reason alone is insufficient grounds for combining these two very different references.

Moreover, the combination of Hsu and Strait does not even provide the invention of claim 1. According to claim 1, the frequency-dependent phase pre-distortion is based on at least one corresponding phase difference between at least one pair of critical frequencies. The Examiner admitted that Hsu does not teach this feature. In order for the combination of Hsu and Strait to provide the invention of claim 1, Strait would, at the very least, have to teach the compensation of some type of distortion based on a phase difference between a pair of frequencies.

While it is true that Strait teaches the determination of the phase difference between two carriers (see, e.g., step 202 of Fig. 2), Strait does not teach the compensation of any type of distortion based on that determined phase difference.

According to Strait, the difference in phase between two carriers is determined in step 202. That determined phase difference is then adjusted to compensate for channel phase distortion. See, e.g., step

204 of Fig. 2. The compensation for the channel phase distortion is not based on Strait's phase difference. Rather, it is Strait's phase difference itself that is adjusted to account for channel phase distortion.

According to Strait, the compensation for channel phase distortion is performed by subtracting a channel phase offset contribution from the determined phase difference, where the channel phase offset contribution may be set to a predetermined value in terms of sample offset. See column 4, lines 42-54. Alternatively, the phase offset due to the channel may be estimated by, for example, varying the assumed channel phase offset  $k_c$  and examining the equalizer convergence during the training period of a time domain adaptive equalizer. See column 4, lines 55-59.

In any case, nowhere does Strait teach or even suggest compensating for channel phase distortion or any other type of distortion based on the phase difference between two frequencies. As such, the combination of Hsu and Strait cannot be said to teach or even suggest frequency-dependent phase pre-distortion based on at least one corresponding phase difference between at least one pair of critical frequencies.

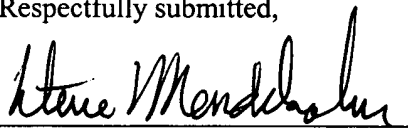
For all these reasons, the Applicant submits that the rejection of previously presented claim 1 is improper and that previously presented claim 1 is allowable over the cited references. For similar reasons, the Applicant submits that previously presented claims 15 and 25 are allowable over the cited references. Since claims 2-14 and 16-24 depend variously from claims 1 and 15, it is further submitted that those claims are also allowable over the cited references.

In view of the foregoing, the Applicant submits that the rejections of claims under Section 103(a) have been overcome.

In view of the above remarks, the Applicant believes that the pending claims are in condition for allowance. Therefore, the Applicant believes that the entire application is now in condition for allowance, and early and favorable action is respectfully solicited.

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